SUMMARY

This permit and fact sheet covers the new city of Shelton Wastewater Reclamation Plant. This system will serve the city of Shelton, Washington Corrections Center (WCC), and the Washington State Patrol Academy (WSP). The reclamation plant is a membrane bioreactor (MBR) extended aeration activated sludge process that will be generating Class A reclaimed water. The reclaimed water will be used at WCC, WSP, or at the sprayfield.

This fact sheet explains and documents the decisions Ecology made in drafting the proposed State Reclaimed Water permit for the city of Shelton Reclamation Plant. This permit will allow the beneficial use of reclaimed water.

State law requires any reclaimed water facility to obtain a permit before using reclaimed water to recharge waters of the state which includes groundwater.

A State Reclaimed Water permit limits the types and amounts of pollution the facility may allow in reclaimed water. The Department of Ecology specifies conditions to demonstrate that the facility has adequately and reliably treated its wastewater to meet the requirements in the Water Reclamation and Reuse Standards appropriate for the use.

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INTRODUCTION

This fact sheet is a companion document to the draft State Reclaimed Water Permit No. ST6216. The Department of Ecology (Ecology) is proposing to issue this permit, which will allow the beneficial use of reclaimed water. This fact sheet explains the nature of the proposed reclamation and reuse treatment, distribution and use, Ecology's decisions on limiting the pollutants in the reclaimed water, and the regulatory and technical bases for those decisions.

The Reclaimed Water Act, Chapter 90.46 Revised Code of Washington (RCW), authorized the development of Water Reclamation and Reuse Standards for the beneficial use of reclaimed water. These standards were completed in 1997. All reclaimed water permits issued by Ecology must specify conditions demonstrating that the wastewater has been adequately and reliably treated to meet the requirements in the Water Reclamation and Reuse Standards appropriate for the use. In addition to meeting the water quality limitations, the standards require specific treatment and disinfection requirements beyond those of most conventional wastewater treatment facilities. The standards also require automated alarms, redundancy of treatment units, emergency storage, stringent operator training requirements and public notification of reclaimed water use.

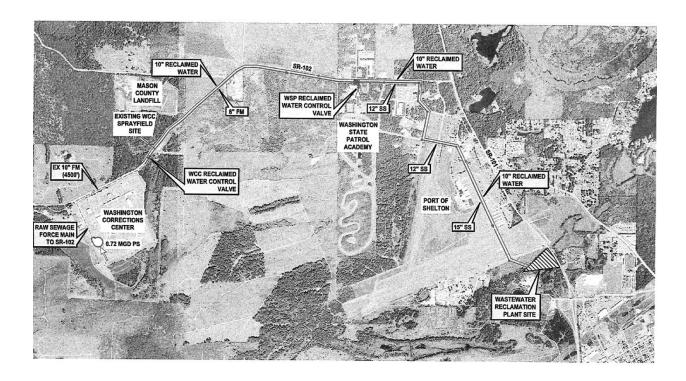
Under the Reclaimed Water Act, a permit is issued to the generator of the reclaimed water who may then distribute the water subject to the permitted provisions governing the location, rate, water quality and purposes of use RCW 90.46.040 states that a permit is required for land application of reclaimed water The permit is issued by Ecology under the authority of Chapter 90.48 RCW which requires that a permit be issued before any discharge of pollutants to waters of the state is allowed (RCW 90.48.080 and 90.48.162). RCW 90.46.030 states that the Department of Health (DOH) may issue a permit for industrial and commercial uses of reclaimed water and that the permits will govern the location, rate, water quality and purposes of use. Per memorandum of agreement between the Departments of Ecology and Health, DOH requirements are included in a single permit issued by Ecology.

In addition to the Water Reclamation and Reuse Standards, regulations adopted by the state, include procedures for issuing permits [Chapter 173-216 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). The Reclaimed Water Act, the Water Reclamation and Reuse Standards and these regulations establish the basis for effluent limitations and other requirements which are included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, Ecology will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of Ecology's response. Changes to the permit will be addressed in Appendix D--Response to Comments

GENERAL INFORMATION		
Applicant	City of Shelton	
Facility Name and Address	Shelton Wastewater Reclamation Plant 10891 State Route 101 Shelton, WA 98584	
Type of Treatment System	Membrane Bioreactor (MBR), Class A Reclaimed Water	
Use Area Location	Latitude: 47.2485 N Longitude: 123.190 W.	
Legal Description of Use Area(s)	Section 4, T20N, R4W, S-1/2 of the SE ½ lying west of the R/W of SR 102 except for the northernmost 300 ft, which is Section 9, T20N, R4W, N-1/2 of the NE ¼ lying west of the R/W of SR 102	
Contact at Facility	Name: John Ozga Telephone #: 360-426-6521 E-mail: wwtp@ci.shelton.wa.us	
Responsible Official	Name: Dave O'Leary Title: City Administrator Address: 525 West Cota Street, Shelton, Washington 98584 Telephone #: 360-432-5110	



BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

HISTORY

The new city of Shelton Wastewater Reclamation Plant (WRP) is one component of the proposed Shelton Regional Water and Wastewater System that will serve the city of Shelton, Washington Corrections Center (WCC), and the Washington State Patrol Academy (WSP). Wastewater from the WCC, WSP, and unincorporated areas in the northwest portion of the Shelton UGA will be directed to the WRP. The WRP is located immediately south of the Port of Shelton's Sanderson Field site and west of State Route 101. Construction of the WRP is planned to be completed in the fall of 2009.

The city of Shelton (City) also owns and operates a treatment plant which discharges secondary treated and disinfected municipal wastewater into Hammersley Inlet. The secondary plant, which started operation in 1979, will still serve the majority of the City. The secondary plant is due for a major upgrade that should start construction in 2010. The secondary plant will handle up to 4.4 MGD.

COLLECTION SYSTEM STATUS

The collection system for the WRP has just been constructed. The collection system runs from WCC, along SR-102. The line is an 8-inch force main from WCC. The collection system picks up flow from the WSP and becomes a 12 to 15-inch gravity line to the WRP. Since the collection system is new, infiltration and inflow are not expected to be a problem. The collection system will be expanded to adjacent areas of the City.

TREATMENT PROCESSES

The treatment process begins with screening (2 mm fine screens) and grit removal. Flow equalization is available for high flows. The secondary treatment is extended aeration activated sludge with two anoxic and two aeration basins. Membranes follow the aeration basins, to produce Class A reclaimed water. Hypochlorite is used for disinfection. The initial construction to be completed in 2009 will have a design flow of 0.4 MGD for the maximum month. By 2024, the design flow is expected to double to 0.8 MGD.

The plant is a Class III plant that requires at least a Class III operator. The plant will be jointly operated with the existing City secondary plant. Total staffing for the two plants should be at least six operators, a laboratory technician, plus two collection system/maintenance personnel.

DISTRIBUTION SYSTEM AND USE AREA

The reclaimed water distribution system runs parallel to the collection system from the WCC and WSP. The distribution system can deliver reclaimed water to WCC and WSP. Each has the right to use as much reclaimed water as the volume of wastewater they discharge to the system. Reclaimed water not used by the WCC or WSP may be used by other users or discharged at the sprayfield. The sprayfield is 27 acres and is located across from WCC, about three miles from the WRP. The sprayfield has been used by WCC to dispose of their wastewater, and has monitoring wells already in place. The City will be leasing the sprayfield from WCC and the City will be responsible for the sprayfield. The trees presently growing at the sprayfield may need to be evaluated as to their appropriateness.

The sprayfield will be used to both percolate reclaimed water, and to irrigate the forest at agronomic rates with substandard water. Substandard water is any water that does not meet Class A standards, but to be in permit compliance, even the substandard water is expected to meet the five-day biochemical oxygen

demand (BOD₅), total suspended solids (TSS), dissolved oxygen, and total nitrogen limits. Substandard water does not need to meet the Class A turbidity or total coliform limits to be discharged at the sprayfield. Substandard water should not exceed a total coliform of 100 organisms per 100 mL.

The same pipeline will be used for distribution of reclaimed water and disposal of substandard water. If any substandard water enters the distribution system, then use of the Class A water must be halted, and water delivered only to the sprayfield. The distribution line must be flushed and the quality of the water confirmed prior to resumption of reclaimed water use. This is not an ideal situation, but came about late in the process after the Port of Shelton dropped out as one of the Partners in this wastewater and water regional project.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. To prevent water quality problems the City is required to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 Code of Federal Regulations (CFR) 503. The disposal of other solid waste is under the jurisdiction of the Mason County Health Department.

The waste activated sludge removed from the process will be hauled to the City's secondary wastewater plant, where in the interim, Class B biosolids are produced. With the upgrades to the secondary treatment plant, the sludge will be processed to a Class A level. This upgrade is scheduled for completion by the end of 2011.

GROUND WATER

The hydrogeology of Mason County occurs in a general framework of three aquifers separated by two confining units, all deposited by glacial and glaciofluvial processes. The Vashon Recessional Outwash comprises the shallowest aquifer, present at or near the ground surface in the vicinity of the sprayfield. The Vashon Till (absent at the spray field) typically underlies the Vashon Recessional Outwash, followed by the Vashon Advance Outwash (shallow aquifer), the Kitsap Formation (confining unit) and the Salmon Springs unit (sea level aquifer). Tertiary-age bedrock serves as the base of the hydrogeology framework. Surface water features in the area include Goldsborough Creek, the North Fork of Goldsborough Creek, and Winter Creek.

Survey data from the spray field monitoring wells WCC-1, WCC-2, MW-6, and MW-9 indicate that the ground surface elevation across the spray field ranges from approximately 312 feet above mean sea level (msl) at WCC-2 to 303 feet msl at MCC-1, indicating a slight slope, in the land surface to the southeast. Geologic depressions called kettles exist on the site, reducing the surface elevation in localized areas to as low as 287 feet msl (Hong West, 1996). Well logs for monitoring wells WCC-1, WCC2, MW-6, and MW-9 indicate that the Vashon Recessional Outwash extends to elevations of approximately 255 feet msl in the vicinity of the sprayfield.

Additional borings north (TH-1) and south (AB-632) of the site suggest the thickness of the Recessional Outwash decreases from approximately 80 feet in the north to approximately 40 feet in the south. Ten grain size analyses performed during a preliminary investigation (Hong West, 1996) of the site identifies the soil as primarily well drained Grove Gravelly Sandy Loam (SCS classification). Using the Unified Soil Classification System, the grain size analyses result in the classification of the material as Poorly

Graded Gravel with Silt and Sand (Hong West, 1996). Observation of the Recessional Outwash at the surface and in erosional outcrops supports these classifications, with the addition of cobbles. The creek bed for the North Fork of the Goldsborough Creek also appears to consist of Recessional Outwash. Slug tests performed during a preliminary investigation (Hong West, 1996) suggested a hydraulic conductivity of 0.3 centimeters per second (cm/s). Other studies suggested values ranging from 0.02 to 0.9 cmts (Hart Crowser, 1996 and Parametrix, 1991) in the vicinity. These values match expectations of hydraulic conductivity for a gravel unit.

Quarterly water level measurements from the spray field monitoring wells (1999 to present) indicate that water in the Recessional Outwash generally flows south- southeast. During periods of elevated groundwater conditions, an eastern component of the flow direction is introduced, likely because the North Fork of Goldsborough Creek intersects the water table closer to the site. The water table elevation ranged from a high of 283 feet in WCC-2 during January 2006 to a low of 257 feet msl in WCC-1 during October 2001. An average of the water levels in all four wells between 1999 and present indicate a mean water table elevation of approximately 270 feet msl. The water table fell below the screened elevation (264 feet) of WCC-2 in October 2001. Historical water levels in the wells over the six-year monitoring period suggests the water table commonly varies by 20 feet seasonally.

The North Fork of Goldsborough Creek originates northeast of the spray field, flows west around the WCC and ultimately terminates in Armstrong Lake. The North Fork of Goldsborough Creek flows seasonally (typically November through June), resulting in a Type 5 classification. On-site personnel observe significant swelling of the North Fork of Goldsborough Creek during rainfalls, suggesting that much of the water infiltrating in the immediate area discharges to the North Fork of Goldsborough Creek. Seasonal flow also occurs in Winter Creek, though the location of Winter Creek upgradient of the spray field suggests it does not directly impact the hydrology of the spray field.

Application of 0.40 MGD of wastewater to a 27-acre sprayfield will likely cause a local rise in the water table of two to four feet. Application of 0.80 MGD of wastewater will likely cause a three to seven foot rise in the water table.

PERMIT STATUS

This is a new facility. An application for a permit was submitted to Ecology on June 5, 2007, and was accepted by Ecology on August 2, 2007.

The facility last received an inspection on March 2, 2009, while it was under construction.

RECLAIMED WATER CHARACTERIZATION

The City reported the expected concentration of pollutants in the reclaimed water in the permit application. The reclaimed water prior to use is characterized for the following parameters:

Table 1: Reclaimed Water Characterization

Parameter	Concentration
Biochemical Oxygen Demand	5 mg/L
Total Suspended Solids	5 mg/L
рН	7.5
Total Nitrogen as N	10 mg/L
Ammonia as N	0.26 mg/L
Total Coliform	2.2/100 mL
Total Dissolved Solids	455 mg/L

SEPA COMPLIANCE

State Environmental Policy Act (SEPA) was completed as part of the facility planning process.

WATER RIGHTS STATUS

The City of Shelton is considered the generator of the reclaimed water and RCW 90.46.120 gives the City exclusive right to any water generated by the wastewater treatment facility. Use and distribution of reclaimed water is exempted from the water right permit requirements of RCW 90.03.250 and 90.44.060.

PROPOSED PERMIT LIMITATIONS

The Reclaimed Water Act, Chapter 90.46 RCW requires that reclaimed water be adequately and reliably treated prior to distribution and beneficial use. State regulations require that limitations set forth in a permit issued under Chapter 90.48 RCW must be either technology- or water quality-based. Municipal wastewater must also be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the state. The minimum criteria to demonstrate compliance with these requirements are derived from the *Water Reclamation and Reuse Standards* and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the reclaimed water land applied or infiltrated to recharge groundwater via surface percolation that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Recharge Criteria (RCW 90.46.080) which are the drinking water standards for the parameters noted and the Ground Water Quality Standards (Chapter 173-200 WAC) for other parameters that require regulation.

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All reclaimed water permits must assure that the effluent has been adequately and reliably treated so that as a result of that treatment, it is suitable for a beneficial use or controlled use that would not otherwise occur and is no longer considered a wastewater [RCW 90.46.010(40)].

The authority and duties for reclaimed water use are in addition to those already provided in law with regard to sewage and wastewater collection, treatment and disposal for the protection of public health and

the safety of the state's waters. All waste discharge permits issued by Ecology must specify conditions requiring all known available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110).

The <u>Water Reclamation and Reuse Standards</u>, 1997, outline the requirements for the additional level of treatment technology as well as water quality limits necessary for public health protection during the use of reclaimed water. The standards provide four classes of reclaimed water, Classes A, B, C, and D.

This facility produces Class A reclaimed water. Class A is the highest quality of reclaimed water and therefore provides the broadest range of reuse opportunities. Conversely, Class A reclaimed water requires the most stringent treatment and water quality limitations. The technology and water quality requirements for the production of Class A reclaimed water are as follows:

"Class A Reclaimed Water" is reclaimed water that had been adequately and reliably treated and, at a minimum is, at all times, an oxidized, coagulated, filtered and disinfected wastewater.

- 1. Oxidized is defined as wastewater in which the organic matter has been stabilized such that the BOD₅ does not exceed 30 mg/L and TSS does not exceed 30 mg/L, is nonputrescible and contains dissolved oxygen, at the end of the secondary process. After the tertiary process or nitrogen removal, BOD₅ should not exceed 20 mg/L.
- 2. Coagulated wastewater is defined as an oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated prior to filtration by the addition of chemicals or by an equally effective method. MBRs do not require coagulation to be an equally effective method.
- 3. Filtered wastewater is defined as an oxidized, coagulated wastewater which has been passed through natural undisturbed soils or filter media, such as sand or anthracite, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of 2 nephelometric turbidity units (NTU), determined monthly, and does not exceed 5 NTU at any time. For MBRs, an average of 0.2 NTU and maximum of 0.5 NTU is used instead of coagulation and to demonstrate membrane integrity. Experience and testing has shown that MBRs should be able to meet 0.2 and 0.5 NTU, if they are not leaking.
- 4. Adequate disinfection is defined as the median number of total coliform organisms in the wastewater after disinfection does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform organisms does not exceed 23 per 100 milliliters in any sample.
- 5. A 0.5 mg/L free chlorine residual shall be maintained in the reclaimed water during conveyance from the reclamation facility to the use areas.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

RCW 90.46.080 states that reclaimed water may be beneficially used for ground water recharge via surface percolation provided that it meets the Groundwater Recharge Criteria as measured in the ground water beneath or down gradient of the recharge project site. The groundwater recharge criteria are defined in 90.46.010 as the contaminant criteria found in the drinking water quality standards adopted by the state Board of Health pursuant to chapter 43.20 RCW and the Department of Health pursuant to

Chapter 70.119A RCW. The primary drinking water standards are listed below. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Table 2: Primary Drinking Water Standards		
Parameter	Concentration	
Nitrate as N	10 mg/L	
Nitrite as N	1 mg/L	
Arsenic	10 μg/L	
Cadmium	5 μg/L	
Chromium	100 μg/L	
Fluoride	4 mg/L	
Mercury	2 μg/L	
Nickel	100 μg/L	
Total Trihalomethanes (TTHM)	80 μg/L	

RCW 90.46.080 further states that if the Ground Water Recharge Criteria do not contain a standard for a constituent or a contaminant, Ecology shall establish a discharge limit consistent with the goals of the Reclaimed Water Act. In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Additional ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

TABLE 3: Additional Ground Water Quality Criteria		
Parameter	Concentration	
Total Dissolved Solids	500 mg/L	
Chloride	250 mg/L	
Sulfate	250 mg/L	
Copper	1000 μg/L	
Lead	50 μg/L	
Manganese	50 μg/L	
Silver	50 μg/L	
Zinc	5000 μg/L	
pН	6.5 to 8.5 standard units	
Total Iron	0.3 mg/L	
Toxics	No toxics in toxic amounts	

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that reclaimed water limitations are being achieved.

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the reclaimed water, the treatment method, significance of pollutants, and cost of monitoring.

GROUND WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Recharge Criteria and the Ground Water Quality Standards, Chapter 173-200 WAC. Ecology has determined that a potential to pollute the ground water may exist. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation.

Ground water monitoring will continue at the wells that WCC has been using to monitor the sprayfield. These four wells include two up-gradient wells (WCC-2 & MW-6) and two down-gradient wells (WCC-1 & MW-9). Limits listed in the permit apply to the down-gradient wells.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify appropriate reporting and recordkeeping requirements to prevent and control the distribution or use of inadequately treated wastewater.

FACILITY LOADING

The design criteria for this water reclamation facility are taken from the May 2006 engineering report prepared by Cosmopolitan Engineering Group and H.R. Esvelt Engineering and are as follows:

Monthly average flow (max. month):

O.4 MGD

Annual average flow:

O.3 MGD

Peak day flow:

O.75 MGD

1.0 MGD

BOD influent loading (max. month)::

TSS influent loading (max. month)::

1,800 lbs/day

Total Nitrogen loading (max. month):

200 lbs/day

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant [WAC 173-216-110(4)]. The Permittee is required to submit an engineering report when the plant reaches 85 percent of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report [WAC 173-216-110(5)]. The permit requires

the Permittee to submit annual reports comparing the actual flow and waste loadings to the design criteria for the plant.

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S5 as authorized under RCW 90.48.110, WAC 173-216-110, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment. The proposed permit requires submission of an Operation & Maintenance (O&M) Manual for the entire wastewater system.

RESIDUAL SOLIDS HANDLING

To prevent water pollution the Permittee is required in permit condition S6 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the local health district.

PRETREATMENT

The Water Reclamation and Reuse Standards require the generator of the reclaimed water to either have an Ecology-delegated industrial wastewater treatment program or all industries discharging into the generator's wastewater collection system shall have current waste discharge permits issued by Ecology. WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

RECLAIMED WATER USE

These permit requirements are based on the Water Reclamation and Reuse Standards authorized in Chapter 90.46 RCW. The standards contain requirements to assure that distribution and use of reclaimed water are protective of public health and the environment at all times. These include prohibitions on bypass, alarms and storage or alternative disposal of substandard water, maintenance of operational records, cross connection control, use area restrictions and enforceable contracts and a local reclaimed water use ordinance.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all waste discharge to ground water permits issued by Ecology.

Condition G1 requires responsible officials or their designated representatives to sign submittals to Ecology. Condition G2 requires the Permittee to allow Ecology to access the treatment system, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to Ecology prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit an engineering report and detailed plans & specifications prior to constructing or modifying the facility and requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G7 discusses transfer of the permit. Condition G8 requires the payment of permit fees. Condition G9 describes the penalties for violating permit conditions. Condition G10 describes the Permittee's duty to provide information to Ecology. Condition

G11 requires the Permittee to comply with the permit. Condition G12 requires the Permittee to submit any proposed contracts for operation of the facility.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing the beneficial use of reclaimed water, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the state of Washington. Ecology proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

City of Shelton, 2007 Permit Application for Reclaimed Water Use

Cosmopolitan Engineering Group, 2006 Shelton Regional Sewer Plan Wastewater Facility Plan

Hart Crowser, Inc, 1986 Geohydrologic Assessment, Mason County Landfill, Shelton, Washington

Hong West & Associates, 1996 <u>Hydrogeologic Evaluation</u>, <u>Proposed Land Application Site</u>, <u>Washington Correction Center</u>, <u>Shelton</u>, <u>Washington</u>

Parametrix, Inc., 1991 Groundwater Monitoring Annual Report, Mason County Landfill

Washington State Department of Ecology, 1993 <u>Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems</u>, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997 <u>Water Reclamation and Reuse Standards</u>, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology

Laws and Regulations: (http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information:

(http://www.ecv.wa.gov/programs/wg/wastewater/index.html)

Washington State Department of Ecology, 2008. <u>Criteria For Sewage Works Design</u>, Ecology Publication # 98-37.

Washington State Department of Ecology, 2005. <u>Implementation Guidance for the Ground Water Quality Standards</u>, Ecology Publication # 96-02.

Washington State Department of Health, 1994. <u>Design Criteria for Municipal Wastewater Land Treatment</u>, 10 pp

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology has tentatively determined to issue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on June 21, 2007, June 28, 2007, June 12, 2008, and June 19, 2008, in the *Mason County Journal* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

Ecology will publish a Public Notice of Draft (PNOD) on ______ in the ______ to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator Department of Ecology Southwest Regional Office P.O. Box 47775 Olympia, Washington 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. Ecology will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

Ecology will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. Ecology's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from Ecology by telephone, 360-407-6278, or by writing to the address listed above.

This fact sheet and permit were written by Dave Dougherty.

APPENDIX B--GLOSSARY

AKART -- The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Alternate Point of Compliance -- An alternative location in the ground water from the point of compliance where compliance with the ground water standards is measured. It may be established in the ground water at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Beneficial Use – The use of reclaimed water that has been transported from the point of production to the point of use without an intervening discharge to the waters of the state, for a beneficial purpose.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

 BOD_5 --Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in

the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Groundwater Recharge Criteria – The contaminant criteria found in the drinking water quality standards adopted by the state board of health pursuant to chapter 43.20 RCW and the department of health pursuant to chapter 70.119A RCW.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Point of Compliance -- The location in the ground water where the enforcement limit shall not be exceeded and a facility must be in compliance with the Ground Water Quality Standards. It is determined on a site specific basis and approved or designated by Ecology. It should be located in the ground water as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless an alternative point of compliance is approved.

Quantitation Level (QL) -- A calculated value five times the MDL (method detection level).

Reclaimed Water – Effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater.

Sample Maximum -- No sample shall exceed this value.

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

Surface Percolation – The controlled application of water to the ground surface for the purpose of replenishing ground water.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria—Coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. A microbiological test is used to detect and enumerate the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--RESPONSE TO COMMENTS